OUTDOOR AIR VENTILATION WORKSHEET

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED

Minimum required outdoor air ventilation for _____ air handling appliance is _____CFM.

INSTRUCTIONS FOR THE OUTDOOR AIR VENTILATION WORKSHEET

This worksheet is intended for use in determining the minimum outdoor air CFM needed at each air-handling unit (ventilation appliance) serving the building. Multiple worksheets should be used if there is more than one air handling unit or if more than one area is served by multiple units.

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Minimum required outdoor air ventilation for _____ air handling appliance is _____CFM.

Total sum of Column 6

In the ROOM OR SPACE DESIGNATION (first) column above, the name or number of a room or space is noted. When spaces served by one appliance have the same use, they may be designated together as one entry.

OCCUPANCY CLASSIFICATION (second) column would have an entry of what the space will be used for (i.e., the function of the space). This may be matched with the use shown in the first column of COMM Table 64.0403. Where function of the space does not match the table, then use the most similar to that actually shown in the table [per COMM 64.0403(4)(b)3.].

FLOOR AREA (third) column above is where an actual square foot area from the plan is entered for the location described in the first column. Correct amount of occupied room net floor area must be carefully entered for each space ["floor net area" doesn't include unoccupied accessory areas or thickness of walls].

DENSITY (fourth) column is the number taken directly from COMM Table 64.0403 as the number of occupants per thousand square feet of net floor area. Note that by COMM 64.0403(4)(b)2. requirement, the space minimum design occupant load for HVAC is calculated by this number. Also note this density is similar to, but not always the same as, a density that is used to determine occupancy for egress design.

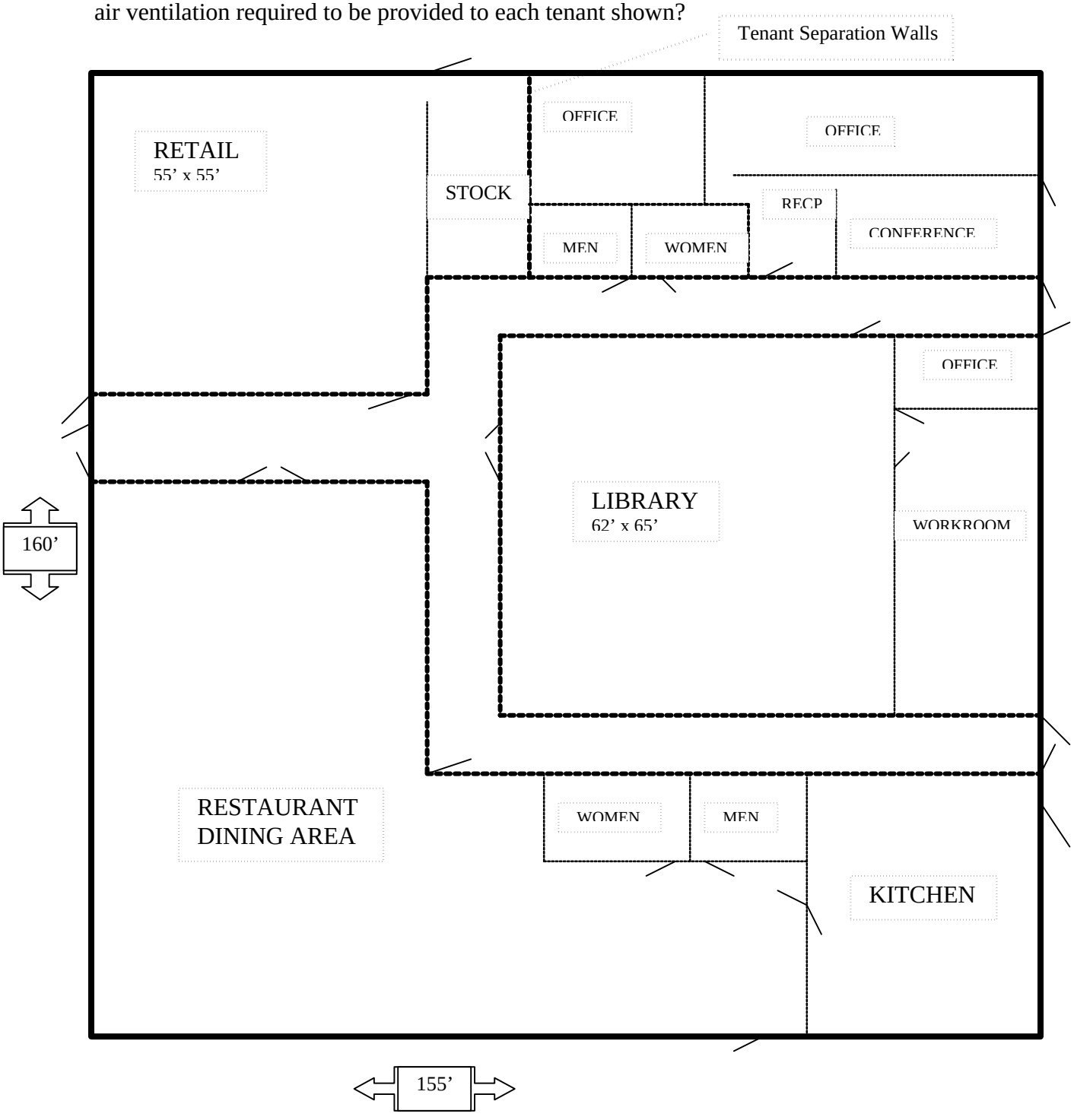
OCCUPANT LOAD BY CALCULATION (fifth) column above is simply the resultant of the floor area in column three divided by 1000 and multiplied by the occupant density in column four. Note that an area not covered by Table 64.0403 may use the actual number of persons in a space [COMM 64.0403(4)(b)3. exception]. Also note COMM 64.0403(4)(c) does allow a reasonable different number of occupants to be determined by other means, with justification acceptable to the Department submitted with plans.

VENTILATION **CFM** NEEDED (sixth) column above is simply the resultant of the fifth column multiplied by 7.5 CFM per person. The totals in this column are then added and the sum is placed into the total line shown below the table. That total is the appliance minimum outdoor air required to be provided (and equivalent amount exhausted elsewhere to balance) for plan approval. Wisconsin professionals are reminded that the judicial system will usually reference ASHRAE Standard 62 for recognized national design practice, not the Wisconsin Commercial Building Code.

NOTE: A minimum 6 air changes must simultaneously be met along with the minimum outside air requirements when there are people present. The minimum 6 air changes may be reduced via COMM Table 64.0403 if the cooling system is sized per COMM 63.1023.

EXAMPLE 1

The sample 155’ x 160’ building below is a multi-tenant building. Each of the four tenants has a separate roof-top air-handling unit serving their space. What is the minimum amount of outdoor air ventilation required to be provided to each tenant shown?



EXAMPLE 1 (continued)

OUTDOOR AIR VENTILATION WORKSHEETS

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
RETAIL	Retail Stores	3025	8	25	187.5
STOCK	Workroom Bank vault	560	5	3	22.5

Minimum required outdoor air ventilation for retail space air handling appliance is ___**210** CFM.

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
RESTAURANT DINING AREA	Dining room	7000	70	490	3675
KITCHEN	Kitchen (cooking)	1670	20	34	255
TOILETS	Toilet rooms	660	0	0	0

Minimum required outdoor air ventilation for restaurant air handling appliance is ___**3930** CFM.

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
OFFICE	Office spaces	630	7	5	37.5
OFFICE	Office spaces	860	7	6	45
RECEPTION	Reception areas	260	60	16	120
CONFERENCE	Conference rooms	560	50	28	210
TOILETS	Toilet rooms	430	0	0	0

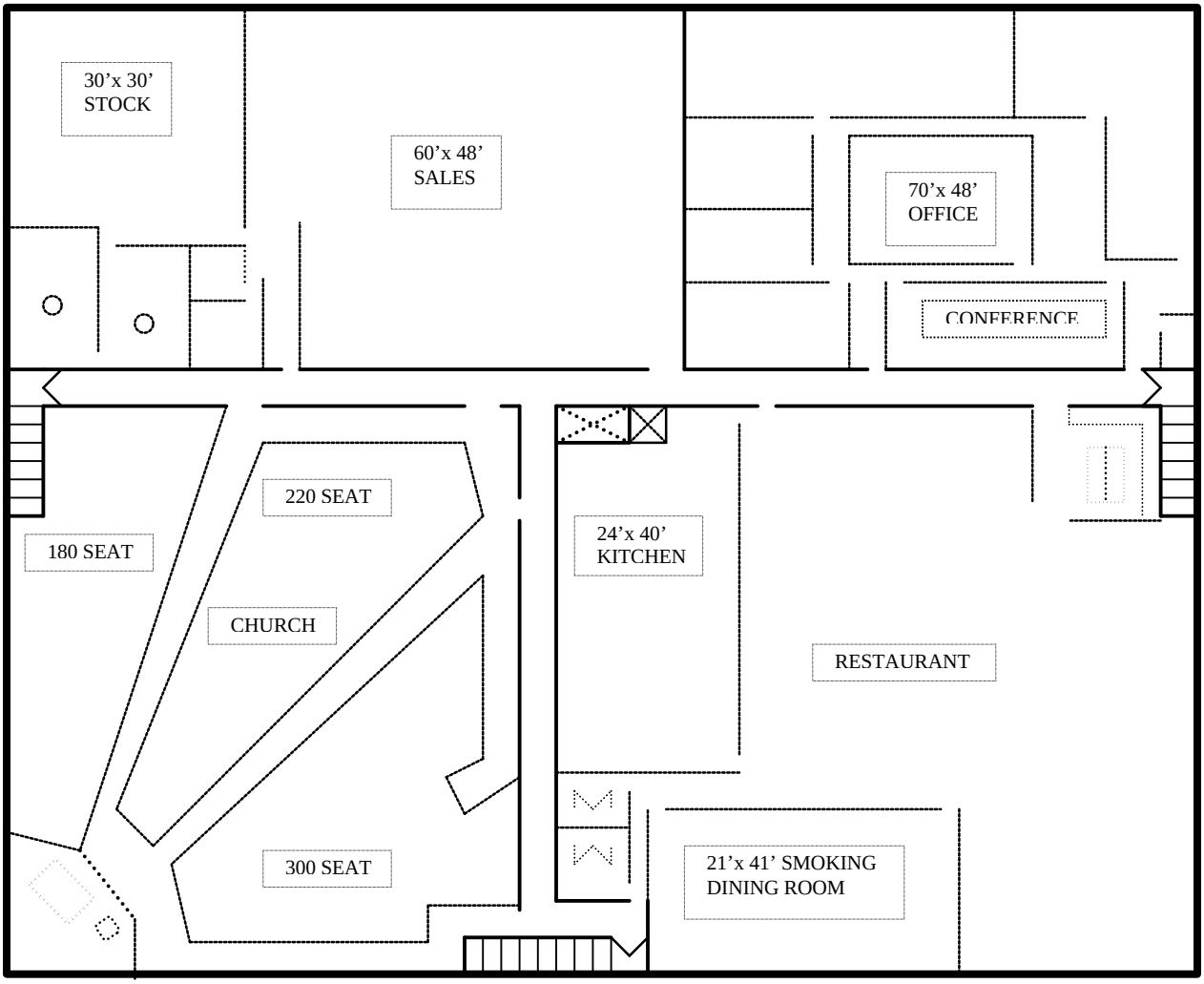
Minimum required outdoor air ventilation for office space air handling appliance is _**412.5** CFM.

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
LIBRARY	Education Classrooms	4030	50	202	1515
OFFICE	Office spaces	290	7	2	15
WORKROOM	Bank vault	1200	5	6	45

Minimum required outdoor air ventilation for library space air handling appliance is _**1575** CFM.

EXAMPLE 2

Below is the second floor plan of a building with a complete sprinkler system. Show the required minimum outdoor ventilation rates for each space. N ◄——► S



The northwest portion is a church containing 700 seats and a small altar platform in the northwest corner, which would have 3 occupants. Since the church is not listed in Table 64.0403, use the actual occupants based on the seating as shown on the floor plan.

The southwest portion is a restaurant with a 21' x 41' smoking dining room, a kitchen, a main dining and area for people waiting to be seated, and two toilet rooms.

The northeast tenant is a retail store with offices, toilets, and stock room. The gross square foot area of stock room is 900 square feet. The office area of the store is 430 square feet and the area of toilet rooms is 145 square feet. Retail space in this tenant is 60'x 48' minus corridor square footage (to obtain the required net floor area values).

The southeast portion shows a 70' x 48' office tenant, which includes a 12' x 32' conference room.

EXAMPLE 2 (continued)

OUTDOOR AIR VENTILATION WORKSHEETS

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
CHURCH			Per COMM 64.0403(4)(b)3.	703	5273

Minimum required outdoor air ventilation for church air handling appliance is _____**5273** CFM.

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
RESTAURANT	Dining rooms	3810	70	267	2002.5
SMOKING DINING	Dining rooms	861	70	61	457.5
KITCHEN	Kitchen (cooking)	960	20	19	142.5
TOILETS	Toilet rooms and bathrooms	170	0	0	0

Minimum required outdoor air ventilation for the restaurant space appliance is _____**2603** CFM.

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
SALES	Retail stores, sales floors	2750	8	22	165
TOILETS	Toilet rooms and bathrooms	145	0	0	0
OFFICES	Office spaces	430	7	3	22.5
STOCK	Workroom Bank vault	900	5	5	37.5

Minimum required outdoor air ventilation for retail air handling appliance is _____**225** CFM.

ROOM OR SPACE DESIGNATION	OCCUPANCY CLASSIFICATION	FLOOR AREA (square feet)	DENSITY PERSONS/1000 SF	OCCUPANT LOAD BY CALCULATION	VENTILATION **CFM** NEEDED
OFFICE	Office spaces	2976	7	21	157.5
CONFERENCE	Conference rooms	384	50	20	150

Minimum required outdoor air ventilation for office air handling appliance is _____**308** CFM.